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THE BIOLOGICAL STANDARDIZATION OF DRUGS.

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Pharmacy calls for accuracy as applied to remedial agents. Absolute and unfailing accuracy to the limits of scientific knowledge and unvarying honesty are fundamental principles to be emphasized and dwelt upon from the beginning of a course in Pharmacy or of medicine, until the last prescription is compounded. There should be no guess work and every effort on the part of pharmacist or doctor or laboratory worker to promote greater exactitude so far as drugs and medicines are concerned is to advance the healing art. Nor is it an unworthy ideal for carelessness in the field of drugs and medicine is scarcely less dangerous than for railroad engineers to guess at the color of signals and there is no questioning that hundreds of people are annually killed because such haphazard and commercial methods have been used in preparing drugs that they do not have the virtues expected of them.

We too often forget that not only medicine but also pharmacy is a business dealing in life and health. It is trite to say that human life often hangs upon a thread and that the merest incident may determine the issue; that the failure of a drug to have the strength it is supposed to have because of impurity or dangerous deterioration or adulteration or lack of active principles

means delayed convalescence or even death. (1) These are statements which may sound a trifle theatrical. One can not often prove them. If a patient is made more violently ill or dies no one suspects that the medicine was at fault. It is a visitation of providence or, as the facetious would have it, a doctor was called and then the undertaker.

My attention has recently been called to a case of poisoning. The patient, who suffered from chronic heart disease, had been receiving tincture of strophanthus in a certain dose. The prescription was refilled and the medication continued. After the second dose from the new strophanthus tincture poisonous symptoms developed although fortunately ultimate recovery ensued after two days of serious illness. An assay made at this laboratory of the strophanthus showed that it was an exceedingly active preparation and whereas the patient was supposed to be receiving the same dose as of the old he actually received an amount of the active principle in this new preparation equal to about three times that of the strophanthus tincture which he had formerly been taking.

In the opposite direction I have a report on a digitalis preparation which upon examination proved to be distinctly depressing to the heart and not a tonic. Who would dare say that the administration of this drug to an already overburdened heart would not produce the most disastrous results. A physician in Baltimore made inquiry of the firm exploiting this preparation. The firm replied that we had made an effort to secure an old and deteriorated sample for our examination. Like certain other extravagant claims made by an occasional manufacturer this statement was a bald untruth to save their own reputation and was absolutely without foundation. The facts are that the original bottle was ordered by our pharmacist from a local jobber and the jobber had no information whatever that the drug was to be tested. It was just such a bottle as would have been dispensed on a physician's prescription.

Upon facts such as these, and the number of specific instances could be multiplied almost indefinitely, the whole theory of drug standardization rests. Any consideration of quality from a commercial standpoint is wholly secondary and drugs should be standardized or assayed that the patient may receive of potent remedies always and invariably the amount of active substance prescribed: and when this has been done the pharmacist has given the best

of his skill as an aid to that of the physician to the cure of the sick.

The committee in charge of the revision of the recent editions of the pharmacopœia have clearly recognized the need for suitable standards especially for the more potent drugs in order to eliminate the danger and inaccuracy in the administration of remedial agents. Thus in the sixth and seventh and eight revisions of the Pharmacopœia we find tests and assay processes introduced while in the Eighth revision a further notable advance was made, in the adoption of a standard for diphtheria antitoxic serum. There are a number of very important drugs long used in medicine and more recently also certain biological products for which chemical tests or assay methods are not available owing to the fact that the chemistry of these substances either is not known or they are of such a character that quantitative methods can not be successfully employed. For these, biological tests and standards have been proposed although excepting that for diphtheria antitoxic serum none have as yet been officially adopted. The recent Pharmacopœial convention however adopted a general principle reading as follows:

"It is recommended that biological tests or assays, when accurate and reliable, may be admitted."

In the group of drugs for which chemical standards are not at the present time available are digitalis, strophanthus, convallaria, squills, apocynum, preparations of the suprarenal glands, ergot, and cannabis indica.

It is somewhat surprising in view of the great importance of some of these drugs that, although biological tests were proposed nearly 50 years ago, no practical application was made until 1898. I am informed that Professor Cushny first suggested such standardization especially for the digitalis group but the first paper relating definitely to the subject was one in October, 1898, by Houghton who worked in Cushny's laboratory. Since Houghton's paper the subject of Biological Standardization has attracted a good deal of attention from pharmacologists and more recently also from progressive drug manufacturers and pharmacists.

The drug, or rather group of drugs, upon which the most work has been done is the digitalis group, it being generally conceded that a method applicable to one member as digitalis itself would be applicable equally to strophanthus or squills. As a result

no less than 15 or 20 methods have been proposed for their assay. So much discussion of these methods has been indulged in and so many statements more or less supported and often unsupported by experimental evidence have been offered by the exponents of a particular method that it seems worth while to take up the various phases of the problem at this time, and this especially because of the possible, and I hope probable, adoption of some method by the committee of revision of the next Pharmacopœia.

If accurate and reliable are the modifying phrases in the recommendation of the Pharmacopœial Convention regarding biological standards. How accurate; How reliable—Digitalis preparations, tinctures, fluidextracts, tablet triturates, and hypodermic tablets, as purchased direct from the manufacturers, vary about 400 per cent. in activity. Is the revision committee willing to adopt any method which will reduce this enormous variation to 50 per cent? I am absolutely certain it will mean that lives will be saved every year. If any biological method will reduce the variation of the preparations on the market to 25 per cent. instead of 400 will it be worth while? Will it be accurate enough? I would much prefer that I myself should be assured by the Pharmacopœia of a drug with no more than 25 per cent. variation rather than to take my chances with a drug now of one strength and on a refilled prescription one or four times the strength.

In this country four methods have been proposed, namely, Houghton's twelve hour frog method, Reed and Vanderkleed's method using the guinea pig, a method proposed by Hatcher using the cat; all of these methods depending on the determination of the least fatal dose for the animal in question, and finally the method proposed by Famulener and Lyons, that of determining the least amount of the drug to stop the heart of a frog in one hour.

Houghton's method is to choose frogs of about the same weight and inject them with a given amount of the drug. If, at the end of 12 hours, the animal is dead the dose is reduced, if alive the dose is increased. By use of a series of frogs with varying doses the assay may be hastened. An experiment published in the AMERICAN JOURNAL OF PHARMACY indicates that 3 days were required to make the assay, and the assay required the use of 14 frogs, the cost of which in any section of the United States including express charges would be under one dollar. In Washing-

ton the cost would be 60 cents for frogs shipped 800 to 1000 miles.

Reed and Vanderkleed's method of assay is probably well known to you. I quote from a recent article by Githens and Vanderkleed. "Guinea pigs are first weighed and then to one pig is given hypodermically the standard minimal fatal dose as determined by a large series of experiments on guinea pigs, to a second 9/10 of this, and to a third 11/10. If the drug is of the proper strength the two pigs receiving the larger dose will die, the third will recover. If two pigs live the dose is increased by tenths until two die. If all three die the dose is reduced by tenths until a pig lives." The cost of animals at Washington would be not less than $2.00 and the assay would take, I presume, about a day. However, in testing out this method for myself the smallest number of animals used in an assay was 7, the largest number 18, the average of the test of 8 different preparations being 11 which would cost us $5.50 per assay and the time required would be extended to at least two days. Further, certain animals survived doses 20 per cent. larger than had killed others. Thus, 4 were killed with 0.5 mgm. per gram body weight, 3 lived with 0.6 mgm. doses of the same drug.

Hatcher's method is the most complex of all although he suggests that the retail pharmacist would find it available for his use on account of its simplicity. That certainly will make it appear attractive even though it is undoubedly the most difficult of all the American methods.

In this method a cat is anæsthetized, the femoral vein is exposed and a cannula introduced. Then into this the digitalis preparation is slowly injected and the injection stopped or continued slowly when toxic symptoms such as irregularity of the heart and respiration, convulsions, etc. are seen; the end reaction is the death of the animal.

A modification of this method is to inject about 75 per cent. of the supposed fatal dose which is followed by the injection of ouabain which acts like digitalis but more rapidly until toxic symptoms appear, the drug is then continued more slowly until death results. For this method an accuracy of within 3 per cent. has been claimed, but from later investigations Hatcher says a number of cats have been found which tolerate doses nearly 50 per cent. more

than in his earlier experiments. In inexperienced hands the variation would probably be even greater.

These methods all depend on the estimation of the least fatal dose, but for reasons to be given such an end reaction appears to me to be undesirable. Digitalis glucosides act not only on the heart but also directly on the central nervous system first stimulating and then depressing it. In these general toxic methods the drug is given in sufficient doses to cause death without reference to the organs chiefly affected and no one can say, although much theorizing has been indulged in, whether the death is the result of an action on the heart or on the brain or, and I think it extremely likely, a resultant of the action on both brain and heart.

The method is usually carried out using mammals and while this is believed by some to be a step in the right direction on account of the closer relation between the higher animals when compared to cold-blooded animals (frogs) and man certain experimental evidence tends to show that this is not necessarily so. At least it is to be noted that death in such animals in certain cases apparently resulted from a paralysing action on the central nervous system while the heart as recorded by blood pressure tracings was still in good condition. In other cases the respiratory movements were kept up some time after the heart had stopped beating and the blood pressure had fallen to zero. Further the allegation that these effects on the central nervous system are all secondary to the heart action is contrary to the known facts of Physiology.

In this connection it is further urged that a digitalis preparation with a high percentage of the saponin like body, digitonin, would easily cause death from the action of this poison which depresses both the heart and the central nervous system. Thus such a preparation would probably show a high value by a general toxic method although the heart tonic principles might be present in relatively small amounts, or of two preparations with the same proportion of substances acting on the heart that with the larger amount of the saponin like body would assay stronger. In the general toxic method in which frogs are used, as in Houghton's "twelve hour method," this objection would naturally lose some weight on account of the ability of such animals to live a considerable time independently of the central nervous system, the action of the drug being therefore presumably upon the heart.

As a further objection it may be suggested also that a general toxic method would not show adulteration or accidental contamination of a digitalis preparation since a lethal effect could easily be secured from an action of any of a number of poisons or possibly also from substances formed in the deterioration which digitalis preparations are known to undergo. To be certain of a heart tonic, a digitalis action, such a method would need to be controlled by tests upon the heart itself.

The other type methods are based on a general principle which it would seem worth while emphasizing—namely, *that any biological assay method for any drug should take into account that action of the drug upon which its chief therapeutic usefulness rests and that in so far as practical difficulties did not interfere this action should be made the basis of the biological method used in its assay.* In the case of the digitalis group it would seem of considerable importance, if this be true, that the end reaction should be one involving the characteristic effect of the group upon the circulation apparatus and this can be done on mammals only by making use of recording devices and maintaining artificial respiration.

The type method of determining the comparative value by noting their effects upon the heart, especially of the frog, is perhaps the oldest and at the present time the most widely used of all methods as it is used by at least three manufacturers in this country and exclusively in Germany.

Three sub-methods may be described although others are occasionally used; in one the drug is given to the intact animal which is subsequently operated on to note the condition of the heart, in another the drug is given to the animal subsequent to the operative procedure in which the heart is exposed. In the third the heart is removed from the body and perfused; however, the last named methods are not used in this country and will not be discussed on that account in this paper.

The first sub-method, that of examining the heart at some time subsequent to the injection of the drug, the chief points of differences in the manner of experimentation has been in the time at the end of which the heart of the frog should be found in complete systole. Time limits varying from thirty minutes to two hours have been used.

This method has been provisionally adopted at this Laboratory for testing digitalis and allied preparations. The general method

of procedure is essentially the same as that suggested by Famulener and Lyons[1] in which permanent systole of the frog's ventricle at the end of exactly one hour is taken as the end reaction. Some slight modifications have been made, the chief of which is that the assays are all carried out at a constant temperature as it is believed that this precaution results in greater accuracy. The drug is injected through the mouth into the anterior lymph sac of the intact frog (Rana pipiens) and at the end of an hour the animal is pithed (both brain and cord) and the thorax opened. The condition of the heart is then noted and a smaller or larger dose is injected as indicated. To hasten the assay a series of three frogs is usually given doses which vary quite widely and an approximate dose is estimated from these preliminary results. By successively narrowing the limits of dosage that amount just necessary to produce the end reaction may be determined by the use of from 8 to 12 frogs.

The method has the advantage of comparative simplicity so far as operative technique is concerned. The animals are always easily obtained which is a very important consideration and if the storage tanks be kept at a suitable temperature (10° to 15° centigrade) they remain active and healthy for months. In this connection it is worth while calling attention to the difficulty of obtaining a suitable number of mammals, especially cats, rabbits, or dogs, for carrying out such tests on warm blooded animals when a large number of assays are to be made. Of less importance also is that of cost. Frogs for each assay will cost approximately fifty cents. If mammals are used, on the basis that at least three to five should be used for each assay, the cost would be from two to three dollars while to this would be added the expense of food supplies, etc., which in the case of the higher animals is a considerable item.

While thus expressing my belief in the frog as a suitable and, despite certain elemental precautions, a convenient animal for assay purposes it has never been shown to what degree biological assays, using either frogs or other animals, were accurate and especially as showing the therapeutic potency of a given preparation.

Unknowns made up by a chemist in the Division of Pharmacology were assayed and the results of these assays are grouped

[1] Famulener and Lyons: Proc. Am. Pharm. Ass., 1902, **50**, 415.

together in the following table not only as a means of comparing the activities of the various so-called pure principles but also to show, in tabular form, the amount of error which is to be expected when using a frog-heart method of assay.

Drug	Assay Value [2]		Unknown Solutions per cent. error.			
	1910	1902 [3]	1	2	3	4
Strophanthin	0.000,001,10	0.000,000,5	1.8	2.9	3.1	1.4
Convallamarin	0.000,004,75	0.000,004,5	8.6	10.6	7.4	9.0
Digitoxin	0.000,008,50	0.000,008,5	7.2	3.8	0.7	5.2
French Digitalin	0.000,013,00	0.000,015	1.6	3.8	3.6	2.6
Digitalein	0.000,024,00	0.000,032,5	4.5	3.8	6.0	1.5
German Digitalin	0.000,070,00	0.000,022,5	2.5	2.8	5.9	0.0

From this summary it is apparent that strophanthin is the most active, the German digitalin (Digitalin purum Grübler) is the weakest and that digitoxin the most active of the digitalis glucosides, is about 8 times less active than amorphous strophanthin. It is not urged on the basis of these experiments, however, that in the clinical use of these substances doses be given proportionate to these values. But in so far as secondary factors, such as rate of absorption and elimination, do not interfere proportionate doses would probably give like therapeutic results. Elemental tissues such as the heart muscle, no matter from what animal species, react qualitatively the same. As pointed out by Cushny [4] the action of the digitalis group upon the frog's heart is strictly analogous to the action on the mammalian heart with differences in action, dependent upon a stronger vagus activity in the higher animal species. In the therapeutic use of the drug only the first stage which consists of a minimal activity of the vagi and a definitely increased activity of the muscle substance itself is desired. The action on the frog is almost purely a muscle action and it is upon such grounds that biological assay methods on the lower forms of animal life are believed to give results which are capable of direct utilization in therapeutics.

On theoretical grounds, therefore, there is no reason why assays using frogs will not give results which may not be depended

[2] Amount in gram per gram body weight of Rana pipiens to cause permanent systole of the ventricle in one hour.

[3] Famulener and Lyons.

[4] Cushny: Pharmacology and Therapeutics, 1906, p. 466.

on by the clinician and which may be used as a basis for dosage as safely as if assays were carried out on guinea-pigs, rabbits, cats, or dogs and so far as the evidences of accuracy and totality of action go far more safely than if carried out by estimating the single active constituent digitoxin or digitalin by chemical means. Assays, as is to be noted by the above summary, may be made using frogs (possibly also other animals) which will give an estimate of the amount of glucosides in a solution to within a few (1 to 10) per cent. of absolute accuracy.

In all cases in therapeutics the unknown factors of absorption, elimination, and susceptibility will persist in spite of all attempts at assaying the preparations of the digitalis group. But these factors would also exist in like degree as long as several differently active bodies and resinous substances are to be reckoned with even if absolute chemical assays of not one but all the active glucosides of the group were possible. The frog method of assay gives all any assay method can possibly give, that is, a definite index of the amount of active substances, and what is especially important an index of the activity of *all substances* in the preparation which act upon the heart.

Certain factors regarding variation in reaction of frogs to the digitalis group of glucosides, or to other poisons, are of little importance aside from increasing to a very slight degree the complexity of the assay process. The whole question resolves itself into a matter of using a digitalis preparation of known activity and keeping quality (and for this purpose crystallized digitoxin or ouabain is suggested) to standardize the frogs at the same time that the unknown is assayed. In this way accurate results may be obtained without reference to season, age, sex, temperature conditions, or species of frogs used.

I have purposely discussed at some length the frog-heart method as proposed by Famulener and Lyons and it may be regarded somewhat as a personal matter with me since I use it that I should give it so much time. I have tried not to make it so and have approved of it because in my best judgment it was based on perfectly sound physiological facts as well as experimental evidence for, excepting Hatcher's cat method, all these methods have been reviewed after personal investigation and the whole matter considered as impartially as possible previous to its adoption. It is a fact, however, that long acquaintance with a particular method

is apt to lend some bias to one's judgment and also because of longer experience one naturally obtains more uniform with the method he is accustomed to use.

I wish to go on record, however, as believing that the adoption of any one of these methods will give to those who need digitalis medication a vastly more uniform drug than is now obtainable. Absolute accuracy cannot be expected, but there can be no question that a comparatively accurate assay of digitalis is possible with variations not exceeding 10 per cent. in the therapeutic activity of the drug.

ERGOT:

Ergot, the drug next in importance to the digitalis group, is used especially at child birth to promote contraction of the uterus and to thus prevent dangerous and even fatal hemorrhage. At the present time there is no known way to assay ergot accurately by chemical means, but it is known from clinical as well as physiological tests that many samples of ergot on the market are absolutely devoid of a typical ergot action, thus often exposing mothers to one of the most feared accidents of child bearing.

The chemistry of ergot is becoming better known and at the present time some five active constituents have been pretty certainly isolated in a pure state. These are ergotoxine and ergotinine, which are characteristic of ergot, parahydroxyphenylethylamine, betaimidoazolylethylamine, and guanidobutylamine—the amines being found also in other places as in the decomposition of meats. Of these, ergotoxine causes a marked contraction of the pregnant uterus and also a certain amount of contraction of the non-pregnant organ. In addition it also causes bluing and gangrene of the cock's comb and causes an increase of blood pressure. Ergotinine has little or no activity but is closely related chemically to ergotoxine. One of the amines causes a rise in blood pressure, another a fall, but both cause contraction of the non-pregnant uterus. It has by no means been clearly established what their effect is upon the pregnant organ. The third amine has not been tested physiologically. In addition there is no reason to believe that there may not yet be some half dozen other bodies all with more or less action on the uterus.

For digitalis chemical methods may at some time be available, but it seems absolutely unlikely that a chemical assay will ever

show the therapeutic activity of ergot. Biological tests, however, have been used for many years and to Kobert and Grunfeld may be given the honor of suggesting a method of biologically determining the activity of this drug. The method is that of producing the characteristic bluing or gangrene of the cock's comb and in 1898 Houghton applied such a method commercially. In this method the drug is fed or injected intramuscularly into roosters, in such a dose as to cause bluing of the comb and I believe in all cases comparing the intensity of this action with some standard preparation.

A second method is that of estimating the amount of rise in blood pressure as a result of a given dose. The stronger the preparation, the higher the blood pressure in direct proportion. A third method is that of using the uterus itself as a test object, some workers carrying on the experiments on the intact animal and others on the organ isolated from the body. Usually cats are used, but dogs, guinea pigs, and rabbits have been tried, with less satisfactory results, however. The drug to be tested must be compared with a standard preparation carrying out the test upon the same organ since different uteri react very differently.

Recently also Dr. Wood has suggested a chemical method based on the estimation of the benzole extractive, probably an impure ergotoxin, after precipitating the ergot with water. The increase in the amount of extractive was found by him to increase proportionally as the increase in blood pressure on injection of the drug in dogs. His premise is that blood pressure estimations are a true index of the activity of a given preparation and hence concludes that the benzole extractive is an accurate index of the drugs therapeutic properties.

A further chemical method is the estimation of the Cornutine content of ergot—cornutine being an impure mixture of ergotixine and ergotinine.

Dr. Edmunds of the University of Michigan and I have been engaged in a study of the assay processes for this drug. This investigation is not yet quite completed but both of us feel that certain facts are fairly well established.

The chemical methods of Dr. Wood and Professor Keller were used. In all cases duplicate and in certain instances quadruple estimations were made of both the cornutine content and the benzole extractive. Rippetoe's modification of Wood's method,

that of taking an aliquot part, was also tested and gave results corresponding closely.

The three biological methods were also employed. Cocks of the Leghorn variety and of nearly pure blood were chosen for observations on the cock's comb. Mongrel roosters cannot be successfully used on account of individual variation. We have also some evidence that they should be of the same age, the older roosters apparently being more resistant. The drug was injected into the breast muscle as a rule but in a few instances into the thigh. The doses ranged from 1 to 4 c.c. of the fluid extract and in each instance a control rooster was injected with one of the preparations which we used as a standard. A minimal bluing was regarded by us as the best for making the comparisons but doses above and below this were given to insure greater accuracy of results. In this way differences of probably 15 per cent. could be determined.

In the blood pressure work dogs anæsthetized with morphine were used and the drug in the dosage recommended by Wood was injected into the saphenous vein. The average of the maximum rise, the 5 minute and the 10 minute rise in blood pressure were taken as the index of the drugs activity.

In the uterus method cats were employed for all determinative readings. For the intact animal, after anæsthesia, using chloral and ethyl carbamate, the animal was submerged in a large tank filled with salt solution to protect the uterus from the air. The abdomen was opened and a lever attached to the uterus. The drug was injected through a cannula into a vein. A standard drug as a basis of comparison was injected alternately with the ergot preparation under consideration and the effect on the uterus recorded by the lever on a smoked paper.

The work on the isolated uterus is much simpler. The animal is either killed outright or anæsthetized and the uterus removed. Only a very short section of this organ is used—in the contracted state not over a centimetre in length; this is put in a small constant temperature bath which is filled with an oxygenated physiological salt solution after the formula of Locke. The organ is then attached to a writing lever in order to secure a record of its movements.

Uterus tracings from different animals differ widely in character which makes the effect of ergot difficult to read. After some

experience, however, and after securing a large number of readings, all of which may be made on the same organ, a fairly definite idea may be obtained of the strength of the drugs, the standard and the unknown.

As a result of these studies we have arrived at certain conclusions basing them on the comparative values obtained from assays of a number of commercial preparations using the five methods outlined above.

The three biological methods showed a very fair agreement while the results from the uterus and cock's comb methods showed an extraordinary one. This was a matter of considerable surprise to us since we had believed from a rather limited experience that the cock's comb method would not give concordant results. In this series there appeared to be an almost exact parallelism between these two methods throughout the series. The blood pressure method was generally concordant but in certain instances showed a wide variation from the results by the other methods.

The two chemical methods did not show any definite relation to the biological methods although there was some agreement. The cornutine of Keller more closely paralleled the biological tests than did the benzole extractive of Wood, only three of the latter estimations in 11 experiments corresponding to the rise in blood pressure.

Just how closely the therapeutic value of ergot corresponds to the activity as expressed by these assays cannot be definitely determined because of the complexity of the chemical substances found in this drug and also because of the variability in their actions. There is sufficient evidence to show, even if the relation is not an exact one, that there is a fairly close correspondence, however, as is evidenced by the surprising agreement between the results by various biological methods. I am also convinced as with digitalis that the adoption of any one of these methods will result in the production of infinitely more uniform preparations of ergot than can now be obtained. The limits of variation from a given standard, as a definite amount of ergotoxine, would probably need to be fairly wide, but even with a standard allowing of considerable variation a great deal would be gained for obstetrical patients who, as matters now stand, often gain nothing from the administration of this important drug because of its inactivity.

I stated in the beginning as an ideal that we should aim for

absolutely accuracy in all matters relating to drugs and this can only be secured through official recognition of some standard and a method of assay. Where accuracy of assay cannot be absolute it certainly is no unworthy ideal to ask in behalf of the sick for relative accuracy and uniformity such as biological assays and standards will give and I hope that it is not too visionary to think that biological methods at least for the digitalis group, for ergot and for suprarenal gland preparations may be adopted by the Pharmacopœial revision committee.

SURGEONS GRIT SOAP.

By John K. Thum, Ph.G.
Pharmacist at the German Hospital, Philadelphia.

The thorough cleansing of the surgeon's hands previous to a surgical operation is of the utmost importance. Vigorous rubbing with soap and hot water, and plenty of it, is the usual initial performance in sterilizing the hands of the operator.

Lately, in place of the ordinary hard, soft, or liquid soap, some surgeons are using a grit or pumice soap. For reasons that are obvious, all dirt and foreign matter adhering to the hands are more easily and readily removed.

For some reason the manufacturers of these pumice soaps make them exceedingly alkaline. As can be easily imagined this excess of free alkali is very prone to destroy the epidermis and render the hands of the surgeon sore and unsightly. For this reason the surgeon at the institution with which I am connected has ceased to use the commercial pumice soap and instead is using one of our own manufacture.

This soap was made by boiling cottonseed oil with strong solution of sodium hydroxide for one-half hour, adding a small quantity of alcohol to facilitate saponification, and precipitating the soap with a 20 per cent. solution of common salt. Common salt not only separates the soap but it also rids it of nearly all free alkali. The mixture was then thrown on a strainer and allowed to drain. The precipitated soap was then washed with distilled water and expressed. Powdered pumice was next added and thoroughly incorporated. The soap was then put into a suitable mold and placed, well covered with gauze, in a cool dry room, to harden.

This method had its disadvantages, however. It required from five to six weeks to become firm and hard enough for its intended use. It also was somewhat brittle. This, however, was overcome to some extent by using potassium hydroxide instead of the sodium hydroxide, but the length of time for hardening was not materially decreased. Of course, this could have been overcome by using animal fat or tallow, but it is not always practicable or possible to obtain this readily.

It then occurred to the writer that stearic acid and cottonseed oil in equal proportions might produce a soap that would harden at once or in much less time than the method described above.

Accordingly some experimentation was carried on with this fatty acid and cottonseed oil and the results were both encouraging and satisfactory. So much so in fact, that the following formula and method of procedure was finally decided upon as yielding the better product.

Cottonseed oil	500 c.c.
Stearic acid	500 Gms.
Sodium hydroxide	150 Gms.
Alcohol	150 c.c.
20 per cent. solution sodium chloride	q.s.
Distilled water	q.s.
Powdered pumice	300 Gms.

Heat the cottonseed oil and stearic acid until the acid is completely dissolved. Then add the sodium hydroxide, dissolved in a litre of distilled water, and heat for 15 minutes with constant stirring. Next add the alcohol and stir until saponification is effected. This is noticed by the mixture becoming homogeneous in a few minutes. Then add one litre of a 20 per cent. solution of sodium chloride and stir vigorously. Allow to stand until the soap is hardened; the alkaline liquid, which remains at the bottom of the container, is then drained out by punching a hole in the soapy mass on one side. It is then washed two or three times with distilled water, melted, and while still on the fire, the powdered pumice is added, and the whole thoroughly incorporated. While still hot it is poured into suitable moulds. In twenty-four hours the soap is sufficiently hard enough for use.

A STANDARD FOR TINCTURE OF CARAMEL.*

By Geo. A. Menge.

The subcommittee in charge of color standards to be incorporated in the new National Formulary has under consideration two methods for the color standardization of tincture of caramel; by comparing it, or a given dilution with water, with a solution having a readily reproduced color value. The first of the methods proposed provides for a comparatively dilute solution, prepared as follows:

"Place 0.5 Gm. sugar in dry test tube 20 mm. diameter. Immerse the tube to a depth of 5 cm. in a sulphuric acid bath, previously heated to 210° C. and keep at that temperature for 20 minutes. Remove the tube and when cold dissolve in sufficient water to make 200 c.c. Add 50 c.c. alcohol and sufficient water to make *exactly* 250 c.c."

A modification of this method has been suggested by Mr. Raubenheimer to the extent of substituting a bath of petrolatum at 200° C. for the sulphuric acid at 210° C.

The second method now in the hands of the subcommittee as modified by Mr. Raubenheimer, reads as follows:

"On a sand bath heat 100 gm. of sugar to 200° C. and keep at that temperature for one hour, stirring constantly—then add sufficient water to make 100 c.c. when cold."

From the point of view of the pharmacist the first method seems to me to be practically impossible. It obviously could not, with reason or common-sense, be applied without the advantage in equipment of a very effective *enclosed* hood—and such an advantage, I take it, is not common. To apply it without such equipment would entail great discomfort, if not more serious consequences. The fumes of sulphuric acid at 210° C. are abundant and more or less destructive, and their effect upon fixtures, upon pharmacists, and

* Read at the meeting of the City of Washington Branch, Am. Pharm Ass'n., held February 11, 1911.

upon any customers that might be at hand may reasonably be described as intolerable if, by any possibility, avoidable.

Furthermore, the size of the vessel and the volume of acid required for the application of this method is quite considerable—sooner or later a beaker or other container would break, and sulphuric acid at 210° C., splashing around on fixtures and operator is another unpleasant possibility, associated with this method.

The suggested substitution of petrolatum for sulphuric acid seems to me to only change the character of danger and discomfort without greatly reducing either.

The second method, while doubtless safe, would seem to be barely less objectionable in the detail of fuming. To heat *100 Gm.* of sugar to *200° C.* for *1 hour* would surely caramelize the whole store—certainly the man who had to stand and stir for *one hour* would become thoroughly saturated with the odor of burnt sugar. Moreover the big time factor involved makes the method objectionable.

In attempting to devise a more practical method than the two described above, I have conducted a series of experiments to determine quantitatively the effect of sulphuric acid in direct contact with sugar as a means of producing colored solutions of the desired tint.

Without taking time to describe experiments it is perhaps sufficient to say that I finally succeeded in obtaining a solution which conformed exactly, or very nearly so, to the color produced by the first method.

The proceedure is as follows:

Make a sulphuric acid solution by adding 2 c.c. of pure concentrated sulphuric acid (specific gravity 1.84) to 12 c.c. of water. Take 0.5 Gm. of sugar in a test-tube—add 5 c.c. of the acid solution described above, and heat the mixture in a boiling water bath, with mixture continually submerged and with constant agitation, for exactly 5 minutes. Immediately add a little cold water and then 35 c.c. of the U.S.P. test-solution of potassium hydroxide; finally dilute to 100 c.c.

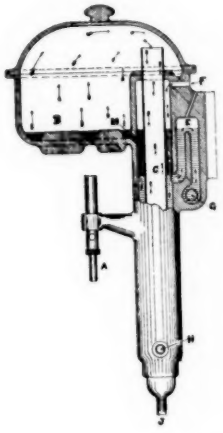
The whole procedure takes 15 minutes, is absolutely without danger or discomfort, and gives correlating results that very closely approximate those obtained by the first method outlined.

AUTOMATIC WATER STILL.

By F. J. Stokes.

Several papers have been published in the American Journal of Pharmacy on desirable forms of stills for pharmaceutical purposes.

Professor Procter described a still for apothecaries in the American Journal of Pharmacy for January, 1864, p. 12. This still was a modification of the apparatus described by him in 1848 in the American edition of Mohr and Redwood's Pharmacy. In the same issue (page 22) Mr. Wiegand described a still which was primarily used to recover alcohol from various preparations.



Somewhat later Neynaber (Amer. Jour. Pharm., 1865, p. 166) described an automatic pharmaceutical still in which a continuous distillation was affected. Pharmacists, generally, are familiar with the distillatory apparatus devised by Professor Remington (see this Journal, 1878, p. 15; 1879, p. 225).

Without entering into a description of the various forms of stills which have already been devised, I shall consider a new and inexpensive automatic water still which is of interest to every druggist as it produces distilled water at the remarkably low cost of one cent per gallon per hour. It is gas heated and being automatic requires no attention. It is fastened to the wall and gas and water connections can be made with rubber tubing.

The main body and condenser of the still are cast in one piece which eliminates joints and makes it substantial. The dome or cover is porcelain lined to prevent corrosion while the condenser is block tin lined. The still is supported by a wall bracket from which it can be separated or slipped, without unscrewing, for the purpose of cleaning.

The still consumes ten (10) cubic feet of gas for each gallon of water distilled or at a cost of one cent per gallon.

By a patented construction the Stokes Automatic Still accomplishes two novel results. It utilizes the steam generated for heating the feed water to the boiling point, so that a minimum of heat is required to operate it, and by this preliminary heating of the feed water the ammonia and other gases are largely eliminated.

The following is a brief description of the still and its manner of action: The feed water enters at (H) in diagram, surrounding the condenser tube (C) and serves first to condense the steam generated in the still (B). As the steam descends the condenser tube it becomes heated to the boiling point by the time it reaches the top, where the ammonia and other gases escape into the air through the passage (F). A part of the feed water flows over the goose neck (E) into the sink and the balance passes into the still through the passage (M). The still is heated by a Bunsen burner. The distilled water comes out at (J) and can be piped to any receptacle. The condenser tube extends to the extreme top of the steam chamber and high above the water level, so there is no danger of water being carried over by the steam.

THIRTY-SIXTH ANNUAL MEETING OF THE NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION.

By C. Mahlon Kline.

The Thirty-Sixth Annual Meeting of the National Wholesale Druggists' Association was held at Dallas, Texas, and while the attendance naturally was less than if the meeting had been held at a more central location, the majority of those who have been active in the Association work in the past found time to attend.

The meeting was characterized by the greatest harmony and

good feeling. Old ties of friendship were renewed, and had it not been for the discomforts afforded by the Southland Hotel, the meeting would have been in every way a memorable one. This hotel evidently calculated that the National Wholesale Druggists' Association would not be likely to meet again in Dallas for at least twenty years, and, therefore, proceeded in a cold-blooded way to make what it could out of its guests before they should escape from its clutches. One man upon being shown his room at the Hotel Southland, and finding it uninhabitable, decided to leave and go to another hotel. The management charged him for the day before and the day on which he rejected the room, before they would release his baggage. Such treatment is not calculated to make Dallas attractive as a convention city, though in the past a number of conventions have held their meetings there.

It is very difficult to separate from Texas the idea of a boundless plain, unbroken by habitation, through which wild steers gallop unrestrained. As a matter of fact a wild steer could not gallop more than a few hundred yards before coming into contact with a modern up-to-date wire fence. The state is completely fenced from one end to the other, and is dotted over as far as the eye can see with innumerable farm-houses. There is very little of it that is not cultivated. The cotton fields are exceedingly fine, stretching for miles and miles over the level plains. The cotton plants themselves appearing far more productive than those I have formerly seen in the south. According to the natives that I interviewed, this is correct, as the Texas cotton fields are said to produce about twice as much per acre as those in the South Atlantic States. For the accuracy of this statement I will not be responsible, as the average native Texan is exceedingly proud of his state, and very boastful of what it can do.

The meetings of the Convention were very ably presided over by the President, Mr. Chas. S. Martin, who made an unusually efficient presiding officer, and whose ability went far toward expediting business and whose personality injected into the meetings an atmosphere of cordial geniality. It would be difficult to find a more able President than Mr. Martin has proven himself to be.

The newly-elected President, Dr. Wm. J. Schieffelin, is well known to every one connected with the drug business in the United States to-day, and his selection as President of the Association cannot help but be approved by every one who has the pleasure of his

acquaintance. He can be trusted to look upon any matter in a broad, unselfish light, as he is animated by no petty thoughts of personal gain. It is such men as Dr. Schieffelin who help so much to make the National Wholesale Druggists' Association a broad power in the affairs of the country at large, and an association which is known as seeking the public weal rather than its own selfish ends.

Among those who addressed us at the first business session was Dr. Kebler of the Department of Agriculture at Washington. He spoke feelingly against the traffic in cocaine, morphine and opium, and also against those druggists who allow themselves to become mere "booze" sellers, stating that, in his opinion, the drug business should be absolutely divorced from the liquor business. Dr. Kebler made the statement that he believed over 80 per cent. of the morphine and cocaine sold in this country was used for illegitimate purposes, and that 1 per cent. of the people of the United States were habitual users of these drugs in one form or another. He said that he wanted to commend the action of Philadelphia druggists in refusing to sell certain commodities excepting on physicians' prescriptions, and also the National Association of Retail Druggists in putting themselves on record to the effect that they would use every possible effort to enact legislation which would tend to the eradication of those products that are sold indiscriminately to the public, containing cocaine, morphine, opium, etc.

Prof. Eberle, President of the American Pharmaceutical Association, made a very interesting address before the Convention. Among other things, he said that he believed some means could be devised whereby closer association could be established between the A.Ph.A., N.A.R.D., and N.W.D.A., if in no other way than by having a counsel to which delegates from the three associations could be elected.

Mr. Plaut, in replying to Professor Eberle's remarks, paid a very high tribute to the American Pharmaceutical Association and to the excellent scientific work that was effected by the Bulletin of this Association. In alluding to the encouragement which should be given to the American Pharmaceutical Association in its work, Mr. Plaut said that a man of education and of culture, who is efficient and proficient in his profession, is a better customer, pays his bills more promptly, is a more pleasant person to meet, than the mere seller of ready-made medicines. Mr. Plaut also stated that the American Pharmaceutical Association stood very high in Con-

tinental Europe, that its prominent members are well known, its high standing is recognized, and every American who visits foreign pharmacists and foreign laboratories will be surprised to know that very frequently these gentlemen are better known in foreign countries than they are among ourselves. Mr. Plaut urged every one to join the American Pharmaceutical Association, and thus assist in the elevation of pharmacy.

President Martin in his presidential address touched upon many topics of importance to the country at large, which I shall not attempt to repeat, and which are really not capable of being condensed, as they would necessarily have to be, to be included in this paper. Sufficient is it to say that his report showed that the Association has co-operated with many commercial bodies throughout the country and assisted in bringing about important improvements in trade conditions. Mr. Martin advised that the authorities on legislation be instructed to support the passage of an amendment to the Food and Drug Act, adopting the use of the name "Wood Naptha" to take the place of the name "Wood Alcohol," which name is misleading and has often caused death and blindness because of misunderstanding as to the character of the substance. President Martin called the attention of the Association to the fact that the world has reached that stage in its progress when little is accomplished except through organization and united effort, and that the day of small things has passed and it is the duty of all to participate in the organized effort that makes for the good of the whole. He stated that it was not fair, in fact, it was a gross wrong, that the burden of organization be left on the shoulders of the most enterprising and conscientious, while the selfish, the indolent, and those without a proper scruple in appropriating the fruit of other people's labor, remain at home.

The report of the Committee on The Prevention of Adulteration was exceedingly interesting this year, and all those interested in scientific study and the purity of drugs, as they are offered on the markets, should read the report in full. The Committee stated that an eminent expert, who not very long ago uttered in the public prints a rather wholesale denunciation of the traffic in crude drugs on the ground of widespread practices of sophistication, has more recently been quoted as saying that there is no longer one-tenth the adulteration there was formerly. The report then called attention to the indiscriminate looseness with which the words "adulteration"

and "adulterated" are used. These words are employed daily in official utterance, rendered in a way which has robbed them of their original significance. The deliberately corrupted product of the fraud and the cheat when discovered is called "adulterated," and the innocent material which, although absolutely unsophisticated and intrinsically of the highest merit, happens to exhibit some slight defect in respect of a rigidly fixed standard, is condemned by exactly the same formula; it is "adulterated." The element of moral turpitude appears to have been eliminated and must no longer, without proof, be assumed to be present where cases of adulteration are reported. At a later meeting the Association took action on this condition as follows: *Resolved,* That the incoming Committee on Legislation be instructed to take such steps as will bring about, at an early date, the abolishment of the improper use of the words "adulteration" and "adulterated" in the publications of the Board of Food and Drug Inspection, as mentioned at length in the Committee's report. In this connection Mr. Plaut brought up a point which is very important: he called the attention of the Association to the fact that the inspection to which goods are subjected at the various points of entry are anything but uniform. He mentioned a case where asafetida bought in Hamburg and sold to a house in Philadelphia was entered at the port of Cleveland, and stated that other drugs were being entered at such points as Minneapolis, Cleveland, Ogdensburg, Albany, etc., where there were no thoroughly organized Bureaus, equipped to test the quality of the drugs, and that in this way inferior drugs obtained admission to the country in a way that could not be effected were they entered at some of the regular ports of entry. He advised that the members use their efforts to abolish this objectionable condition of affairs. Mr. Plaut also brought to the attention of the Association the present method of printing the court decisions in the case of prosecutions brought by the Department of Agriculture. As they are printed they are sent broadcast over the country, and it is necessary often to read the leaflet from beginning to end before the reader finds out whether the defendant is innocent or guilty. Many people read but the first few lines and are left with a false impression that the defendant has committed a crime, whereas often the last few lines would prove that he was absolutely innocent. Many delegates recognized the truth of this contention, and a resolution was passed requesting the Committee on Legislation to look into the

possibility of having the decisions in which the defendant is not proven guilty published in a form different from that in cases in which he is convicted, or else that no notice be issued in such a case. To return to the report of the Committee on the Prevention of Adulteration, the report also contends that under the operation of the law, dealers are purchasing goods under a U.S.P. label for resale, even though they know, or suspect that such goods are not what they exactly seem to be, and that they smother their true beliefs by the expression, "What is it to me what the bottle actually contains, does it not bear the guaranty of a reliable house?" The Committee contends that the purchasing departments can do much to prevent adulteration by curbing this insidious tendency. The Committee believes that the work of the Government inspectors employed in inspecting the quality of important drugs has undoubtedly become more and more effective. There is still, however, they believe, a great deal of inconsistency in the methods employed and too strong a tendency to be over-technical in the application of the law to cases where there is obviously no sophistication or demerit. It will be necessary for me to pass over the details of the balance of the report, because they are many and would take too long to read at this time.

The report of the Committee on Trade-marks contained much of interest. The case of the manufacturers of the "Keep Clean Brushes" against the manufacturers of the "Stay Clean Brushes" was cited, in which it was found that, though neither word was capable of being trade-marked, because a descriptive word cannot be trade-marked under our present law, nevertheless, under the laws of unfair competition, the manufacturers of "Keep Clean Brushes" were enabled to obtain a judgment against the manufacturer of "Stay Clean Brushes," because (I quote from the decision) "Where the defendant has so dressed his goods that they may be mistaken for the goods of the complainant, his motive in so doing is either honest or dishonest; if honest, he should stop voluntarily, if dishonest, he should be compelled to stop." The Committee called attention to the Trade-mark Law in California, under the terms of which the manufacturer, in order to protect his rights within the state, must register his trade-mark with the state authorities. A test case is being brought to prove this law unconstitutional, but in the meantime the manufacturers are advised to register their trade-marks in order to fully protect their rights.

The Committee on Paint, Oils and Glass, the advisability of continuing which had been questioned the previous year, proved its worth by coming forward with an excellent report, including many points of undoubted interest and value. The Hepburn Paint Bill was discussed, but what will interest this meeting more was that part of the report of the Committee which has to do with turpentine. Under the Pure Food and Drugs Act it would be necessary for turpentine, or spirits of turpentine, to be unadulterated and to answer the U.S.P. requirements, or else to be properly labelled. Under the ruling whereby an article of this character can be labelled "For technical use" the dealers are enabled to sell an adulterated product without fear of prosecution. Hiding behind this regulation, a large traffic in adulterated turpentine has been carried on, and no dealer to-day can be absolutely sure he is dispensing pure spirits unless he either tests the goods himself, or knows personally that the dealer from whom he buys is absolutely honest. There are three common adulterants: First of all, spirits of turpentine is distilled from the dip or scrape of the living pine tree. The first adulterant, pure wood spirits of turpentine, is made by the destructive distillation of the wood; another adulterant is common benzine; still a third is composed of high boiling hydrocarbons analogous to benzine. Pure wood spirits naturally forms an excellent adulterant, due to the fact that it is very similar in physical properties. Common benzine is the poorest adulterant, on account of its odor and physical properties. The high boiling hydrocarbons, being odorless and very similar to turpentine in physical properties, make an ideal adulterant. Twenty-three samples, most of them obtained from suspected sources, were analyzed by the Committee. Out of the 23 tested, 17 showed adulteration; the average amount of adulterants being 30 per cent. The greatest amount of adulteration was found in Russian turpentine, which contained no trace of turpentine at all, being petroleum. The lowest amount was 10 per cent., this being the percentage usually put in by several unscrupulous dealers in New York City, who sell their product as "pure spirits of turpentine." The quotations of these dealers are always a cent or two under the Official Naval Stores prices. Another group of turpentine adulterators, using about 35 per cent. petroleum, made their headquarters in Cleveland, Ohio. One firm is quite clever, guaranteeing their product to be "pure" according to the analysis printed on the head of the barrel, and not stating whether it was pure turpentine or pure

benzine. The State of Ohio recently passed a Pure Turpentine and Linseed Oil Act which has caused much annoyance to the dealers in adulterated products in that state. The Committee recommends the enactment by each state of a similar law. I made a study of this law, which at first seemed very drastic, but on further consideration, every detail can be lived up to by an honest man doing an honest business and will work no hardship on any one who comes under this heading. The law states that no one shall sell under the name of turpentine, or spirits of turpentine, or any compounding of the word "turpentine," or under any name or device illustrating or suggesting turpentine or spirits of turpentine, any article which is not wholly distilled from rosin, turpentine, gum, etc., and unmixed and unadulterated with oil, benzine, or any other foreign substances of any kind whatsoever, unless the package be marked with letters not less than 2 inches high, "Adulterated Spirits of Turpentine." It can be readily seen that this law covers the situation nicely, and Pennsylvania would do well to adopt such a law, and I recommend that you, whenever the opportunity presents itself, speak a word in favor of such legislation. I would be glad to supply any number of copies of the Ohio law to those who would like to study it. The Chairman of the above-mentioned committee, Mr. Levi Wilcox, of Waterbury, Conn., deserves high commendation for his very excellent report.

The report of the Proprietary Committee, of which Dr. Schieffelin was Chairman, contained considerable of interest to the trade. The general tendency, the Committee reported, of decisions rendered by various courts throughout the land, was to take a less drastic position with reference to the violation of the Sherman Anti-Trust Law. Two cases were referred to in this country and one in Canada where the court took the position that the manufacturer had the right to insist upon the maintenance of his retail price where it could be shown that such an action is only incidentally and indirectly to resist competition, while its chief result is to foster the trade and increase the business of those who make and operate it. These decisions, so different from the one rendered at Indianapolis in the case of the United States against the drug trade, tend to increase confidence in the stability of business and encourage manufacturers to spend larger amounts in advertising their goods, because they feel that they can protect their interests by being allowed to maintain their price to the consumer. An important decision was cited which

increases the value of the guarantee, and shows that the courts will accept a chain of guarantees as fixing the blame on the original guarantor, and that he will be held responsible for fraud even though technicalities may be brought to bear on the case. The case in question is one in which a manufacturer sold to a wholesaler in the same state and the wholesaler in turn sold to a retailer in a nearby state. The manufacturer attempted to evade responsibility on the ground that his sale was only one within the state, rather than an interstate sale, but the courts decided otherwise. The report calls attention to the National Insecticide Act, which was intended to go into effect on January 1st, 1911, and with which you are probably familiar; if not, you had better send for a copy of the Act, as its provisions are more inclusive than you would at first think. The definition is exceedingly broad, and covers insect powders, powdered white hellebore, and every drug or preparation, proprietary or otherwise, which is intended to exterminate insects of all kinds. It also includes fungicides. A committee was appointed by the three secretaries to formulate regulations for the enforcement of the Act, which committee has not yet reported the nature of these regulations, therefore, all dealers have been obliged to hold up the printing of their labels until such regulations are promulgated, because otherwise it might be necessary for them to make two changes in order to comply with the law. Dr. Schieffelin commented on the Owens' Bill, which provides for the establishing of a National Department or Bureau of Health. He stated that his committee opposed that portion of the bill which gives the proposed department power to establish standards for chemicals and other drugs, because they took the position that this was unnecessary, as the present arrangement, which makes the United States Pharmacopœia and National Formulary the official standard, is sufficient. There is no question that the National Department or Bureau of Health could utilize the vast resources of the Federal Government to the great advantage of the nation, by gathering and disseminating information, and materially assisting in preventing diseases and preserving the health of the people. He believes this could be done without encroaching upon the constitutional prerogative of states to exercise police power within their respective borders. The health of our people is the greatest asset of the nation, and any feasible plan that will minimize the loss of valuable human lives is worthy of the most careful consideration.

The report of the Committee on Legislation, whose Chairman is Mr. Chas. A. West, of Boston, shows that they have done much valuable work during this period when it seems to be every politician's ambition to invent some new provision whereby the drug trade can be better controlled. The work of this committee is exceedingly arduous, and it would be practically impossible for the Chairman to operate effectively in every state in the Union, were it not for the fact that the individual members in the states themselves willingly furnish their co-operation. One of the bills mentioned by this committee that is now before congress, was introduced by Mr. Moore of Pennsylvania. It provides for the labelling of packages containing foods, beverages, and drugs, and makes it necessary that they should show the weight or measure on the label. That such a requirement should be made in the case of drugs, whose value does not depend by any means on their weight or measure, is manifestly ridiculous, and the bill has been opposed by the committee. It seems likely that in its present form it will not be passed, but that it will be revised and be made more comprehensive, because as at present worded it only covers the District of Columbia. As the bill is at variance with several state laws pertaining to weights and measures, if passed, it will cause a great deal of confusion. The Committee calls the attention of the Association to the fact that the Pure Food and Drugs Acts passed in the various states are very similar. The attempt to carry out the law by making rules and regulations has proven rather disastrous. The individual who is given the power to make such rules and regulations often largely exceeds his authority, or else insists upon minor points of detail, which, because they differ in the different states, make interstate transactions exceedingly difficult. A label which will comply with the National Law often will not comply with the state regulations, and if it does comply with the regulations of that state, will not comply with the regulations of other states. It must be remembered that the law is a law to prevent adulteration and misbranding only, and that the final word as to whether goods are mislabelled or not is to be decided on those two points only. The Committee requests that the members attempt, as far as possible, to counteract this tendency toward the issuing of annoying regulations, and, in the opinion of the committee, this matter requires some positive action on the part of the united drug interests.

The Legislative Committee reports much activity along the line

of narcotic legislation. This seems to have become a favorite subject for new bills. Three important ones are now under consideration; the Mann Bill, the Collum Bill, and the Foster Bill. The Mann Bill requires that all sellers and shippers of habit-forming drugs shall keep an exact record, regardless of what the shipment may be, and requires a record of such shipment to be kept by the receiver. A number of minor points in the bill seem calculated to work injustice, and the committee, therefore, considers that this Bill should be revised before it receives the support of the drug trade. The Collum Bill was introduced in the Senate, but being a revenue measure, was rejected, as such legislation could only originate in the House. The Foster Bill purposes to place the control of the traffic in narcotic drugs in the charge of the Internal Revenue Department. In order to accomplish this purpose it provides that every wholesale dealer and retail dealer shall be registered, and no sale shall be made excepting to those who have been properly registered. A fine of $500 or imprisonment for one year is the penalty for shipping to any one not properly registered. It also provided for an Internal Revenue tax of 5 cents a pound or fraction of a pound on opium, chloral, and cannabis, and 1 cent a pound on coca leaves. A number of methods of keeping the accounts are provided. The plan to carry out the Internal Revenue control is to put on a stamp, sealing the package, before it is released from a bonded warehouse. The general attitude of the committee is that this measure would be exceedingly burdensome and that it might be possible to accomplish the result in some way less burdensome. Mr. Hamilton Wright, the United States Opium Commissioner, pledged himself to the passage of some bill regulating the traffic in opium, when he was a delegate to the International Opium Congress. He, therefore, considers that, in order to keep faith with the Congress, it is exceedingly desirable that some legislation should be passed in the near future. He is somewhat in favor of the Foster Bill, but not definitely committed to its passage. The representatives of the N.W.D.A. have attempted to persuade him that if this measure should be passed it should be made applicable to cocaine alone at first, until the measure is tried out. This suggestion Mr. Wright has under consideration. There is 400,000 lbs. of opium imported into the United States in a year. Of this it is estimated 300,000 lbs. is used for purposes other than medicine. This figure is very high as compared with the amount consumed in other countries where they have effective laws

governing the traffic in narcotic drugs. The Committee reports that in the case of the Pure Food & Drugs Act it is pretty generally acknowledged by those most familiar with the workings of the law, even including officials, that the labelling clauses are rapidly losing effectiveness, especially so far as the public is concerned. The public does not read the labels or does not understand what it does read. This opinion is so generally accepted that there are many who hope for the enactment of laws that will compel the manufacturers to put in his advertisements all that the law compels him to put on his label.

One thing more I think worth mentioning: the following resolution was passed by the Association: WHEREAS, The attention of the N.W.D.A. has been called to the fact that efforts are now being made to change the form, style, and spelling of the articles used as drugs and chemicals in the coming revision of the U.S.P., be it therefore, *Resolved,* That this Association protests against any changes in form, style, and spelling, except those which may be necessary in the few cases where more exact information and research requires a change. The resolution was introduced because the Association was informed that certain parties were bringing pressure to bear to have the form, style, and spelling of the Pharmacopœia changed. It requires no argument to prove to you what a mistake this would be.

In closing, I would say, that the meeting at Dallas was an entire success, and the members of the Association expect to spend at least another year working in perfect accord toward the betterment of conditions in the drug trade without any factional quarrels to mar the effectiveness of their work.

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PROGRESS IN PHARMACY.

A QUARTERLY REVIEW OF SOME OF THE MORE INTERESTING LITERATURE RELATING TO PHARMACY AND MATERIA MEDICA.

BY M. I. WILBERT, Washington, D. C.

Few subjects, now before the retail druggists of this country, have received more widespread attention by the pharmaceutical press than the *Foster anti-narcotic bill* which is being considered by the Ways and Means Committee of the House of Representatives.

This bill is practically a duplicate of the Cullom bill which was considered in the Senate last year, and as now worded is designed to regulate traffic in cocaine and other habit-forming drugs by imposing an internal revenue tax and requiring that detailed records of all sales be made and reported to the Commissioner of Internal Revenue who is also to make regulations for the enforcement of the act.

In the hearings that have been held on this bill it was generally admitted that the abuse of habit-forming drugs had spread to an alarming extent, in the last 20 or 30 years, and that their consumption, at the present time, was not accounted for by any legitimate use to which they could be put.

It is also agreed that the only way by which the several State laws regulating the sale of habit-forming drugs could be enforced was by having an authoritative source of information regarding the sale, in a large way, of the several articles that are involved.

It must be admitted that this law, or any law of a similar nature, will entail hardships and will involve the expenditure of time and money on the part of those engaged in the several branches of the drug business. But, on the other hand, the possibility of removing from the drug trade the stigma of debasing all strata of society by the encouragement of drug habits is one that should and no doubt will atone for all the trouble and expense that can possibly be involved.

PUBLIC HEALTH SERVICE.—Legislation looking toward the protection of the public health has also been discussed at length and some progress has been made toward the solution of the problems involved. The report of the Committee on Interstate and Foreign Commerce, indorsing the Mann bill, to change the name of the Public Health and Marine-Hospital Service to the Public Health Service and defining its field of usefulness, is reprinted in the *Oil and Paint Reporter* (February 6, 1911, p. 40) and pharmacists who are interested in the progress of public health legislation should read this report and consider the possibilities involved.

PH. GERM. V.—In Europe the new "Deutsches Arzneibuch" has been probably the most fruitful topic of discussion. This book while much larger than any of its predecessors contains but a total of 43 more titles than the Ph. Germ. IV. It represents a rather radical change in the method of revision in that it is the direct product of the "Reichs Gesundheitsamt," being compiled by the

division on materia medica. This division consists of two subdivisions, one medical and one pharmaceutical, and the work on the pharmacopœia represents the contributions of 26 experts.

An editorial (*Pharm. Zentralh.*, 1910, v. 51, pp. 1177–1179) points out that the new Ph. Germ. has a decidedly broader field of usefulness than its predecessor and that the concise and altogether limited descriptions of the former editions have been replaced by more complete monographs, which will be found to be of value not alone in the pharmaceutical laboratory but also in the use of the book by students and by physicians who will find in them much information of practical value.

The general formulas were increased by 13, viz., bacilli, cerata chartæ, collemplastra, mucilagines, pastæ, pulveres, mixti, sapones medicati and vina medicata.

The provisions of the Brussels protocol have been adopted with the special designation P. I.

With the titles adeps suillus, sebum ovile, spiritus e vino and vinum no descriptions or tests are appended, and these articles are expected to conform to the requirements made for commercial articles.

TRADEMARK NAMES.—A review of the new German Pharmacopœia points out that the repeated occurrence of protected designations in the list of additions will surprise those who have followed even superficially the recent trend of events in Germany. It has been the aim of the responsible authorities so far to avoid in any way recognition of vested rights, and thus in the last edition the German pharmacist was regaled with the appalling scientific appellations for antipyrin and salipyrin. In the draft of the present edition, this attitude was adhered to, and the full chemical designation of novocaine and stovaine, for instance, figured as the only titles to the respective monographs. The explanation of this *vollte-face* is not without interest and piquancy. We are told that where the scientific designation is more convenient or in general use it has been adopted; in other cases the protected name was chosen for the title, followed by the chemical name and the protected name also appears beneath the scientific title as a subtitle. The adoption or mention of the registered appellation, however, merely indicates that the *protected preparation must in every respect fulfil the requirements set forth in the Pharmacopœia.—Chem. and Drug.*, Lond., 1910, v. 77, p. 899.

POST-GRADUATE INSTRUCTION.—The Pharmaceutical Institute of

the University of Strassburg announces that a post-graduate course of instruction, covering the changes and requirements of the Ph. Germ. V., is now being arranged for. The course is designed as a review of the more important tests and assay methods of the pharmacopœia and will consist of lectures, demonstrations and practical laboratory work.—*J. d. Pharmacie v. Elsass-Lothringen,* 1911, v. 37, p. 292.

British Pharmacopœia.—Edmund White, in resigning as a member of the British Pharmacopœia Committee of Reference in Pharmacy expresses himself as being dissatisfied with the progress that is being made in revising the British Pharmacopœia. He thinks conditions existing in connection with the revision of the British Pharmacopœia are quite unsatisfactory and points out that the German Pharmacopœia, which is now a State publication, has been developed along much more satisfactory lines.—*Chem. & Drug.,* London, 1911, v. 78, pp. 186–187.

British Pharmaceutical Codex.—An editorial asserts that the revision of the British Pharmaceutical Codex is now well advanced, though it may be several months before it approaches completion. The editorial also points out that most gratifying responses have been received from all to whom appeals for assistance have been made and the Codex as revised may therefore be depended upon as representing the consensus of opinion of practicing pharmacists throughout Great Britain.—*Pharm. J., London,* 1911, v, 86, p. 2.

The Codex Revision Committee is regularly publishing suggested new formulæ and alterations with the request that they be reviewed by pharmacists and that criticisms and further suggestions be forwarded to the office of the committee. These published formulæ have elicited considerable comment, and it is expected that the book as finally published will be free from the glaring errors usually found in works of this kind.

International Congress of Applied Chemistry.—William H. Nichols (*Science,* 1910, v. 32, p. 689) discusses the origin and development of the International Congress of Applied Chemistry, and calls attention to the need for making active preparations for the eighth international Congress which is to meet in this country early in September of 1912.

John Morgan.—A news note announces that at a meeting held in the office of the Provost of the University of Pennsylvania, on

January 13, it was decided to erect a suitable memorial to Dr. John Morgan, the founder of the medical department of the University, the originator of medical schools in the United States, and the first physician, in America, to introduce the writing of prescriptions.—*J. Am. M. Ass.*, v. 56, p. 205.

PARIS SCHOOL OF PHARMACY.—Professor Guignard, who desires to devote himself hereafter solely to scientific work, has requested the minister of public instruction to relieve him of the directorship of the higher school of physiology and pharmacy, which he has carried on for about 15 years, having succeeded Professor Planchon. The faculty of the school has unanimously elected, as the new director, M. Henry Gautier, professor of inorganic chemistry at the school.—*J. Am. M. Ass.*, 1911, v. 56, p. 130.

MEDICAL CURRICULUM.—An editorial note (*Chem. & Drug.*, Lond., 1910, v. 77, p. 834) quotes the *Lancet* which suggests that the reaction against studying materia medica in the medical curriculum has gone too far, and although it is hopeless to attempt to reintroduce the old materia medica a modified form should be tried, and outlines a course that might well be adopted in British medical schools.

PROGRESS IN PHARMACOLOGY.—An editorial commenting on the programme of the Section on Pharmacology and Therapeutics of the British Medical Association asserts that pharmacists, if they are to keep up to date, must keep in close touch with that branch of medicine which deals with the study of the composition and uses of remedies of medicinal value and they must therefore know about the shifting of the old landmarks and note the progress which pharmacologists make in elucidating the action of medicinal agents.—*Chem. & Drug.*, Lond., 1910, v. 77, p. 832.

ANTITYPHOID VACCINATION.—George B. Foster reports an instance illustrating the efficacy of antityphoid vaccination in the U. S. Army. Of 92 members of Company A, First Battalion of Engineers, who were vaccinated, not a single case of typhoid fever developed, while of the total of 24 men not so protected six, or 25 per cent., developed typhoid fever.—*J. Am. M. Ass.*, 1910, v. 55, pp. 1808–1809.

ESSENTIAL OILS AS ANTISEPTICS.—An editorial in discussing the use of essential oils as antiseptics points out that essential oils or substances containing them are the oldest antiseptics that have been used by man, but that it is only within recent years that any

systematic study of their antiseptic action has been made. In a recent investigation made by W. H. Martindale to determine the carbolic acid coefficient of each oil or aromatic substance studied, it was found that oil of origanum had upwards of 25 times the coefficient of carbolic acid; thymol and carvacrol were found to be nearly as active as oil of organum, the coefficient figures being 25.29 and 21.32 respectively.—*Chem. & Drug.*, Lond., 1910, v. 77, p. 832.

CHEMISTRY OF THE TERPENES AND CAMPHORS.—Joseph Samuel Hepburn, in a recent number of the *Journal of the Franklin Institute* (February, 1911, v. 171, pp. 179–203), presents an interesting review of the work that has been done by Otto Wallach and his students on the chemistry of the terpenes and camphors and their related compounds. As many of the compounds referred to are official or at least common articles in the average drug store, this review will be found to be of unusual interest to pharmacists who are desirous of learning the relations existing between them.

STIRRING ROD.—An abstract (from *Südd. Apoth.-Ztg.*, 1910, p. 622) points out that glass tubing properly sealed at either end makes a much better stirring rod than a solid glass rod. The resulting rod is lighter, has a greater volume, and, as a rule, does not break so readily, even when dropped on a wooden table.—*Schweiz. Wchnschr. f. Chem. u. Pharm.*, Zurich, 1910, v. 48, p. 765.

MELTING-POINT DETERMINATION.—Atherton Seidell describes and illustrates a convenient arrangement for providing constant stirring of the sulphuric acid or other bath in making melting-point determinations. The mechanical stirring device is driven by a small water motor, while an even heating of the bath is insured by protecting the flame from air currents and by preventing the free flame from coming in contact with the tube containing the bath.—*J. Am. Chem. Soc.*, 1911, v. 33, p. 83.

DROPS.—Wulff and Hillen describe and illustrate a normal drop ampoulle which they believe to be particularly well adapted to serve as the normal drop counter provided for by the Brussels Conference Protocol.

The apparatus can be used for dispensing substances that are to be used in drop doses, particularly solutions to be used in the eye, where sterility is considered to be an important factor.—*Apoth. Ztg.*, Berl., 1909, v. 25, p. 1014. See also *Pharm. Post*, 1911, v. 44, p. 53.

SALVARSAN is the name under which "606" is being marketed

in this country. A number of papers on the chemical and pharmaceutical properties of this substance have appeared in the current journals and the information necessary for preparing the material for injection is available from the literature accompanying the package.

A report on the chemical properties of salvarsan, by W. A. Puckner and W. S. Hilpert (*J. Am. M. Ass.*, 1911, v. 55, p. 2314), contains the following popular description of its behavior: "Salvarsan is an arsenic compound containing that metal in a low state of oxidation and the product is, therefore, a powerful reducing agent and is decomposed by bodies which are oxidizers, including air. Being a weak base its hydrochloride, when dissolved in water, is largely decomposed by the latter (hydrolyzed) and hence gives a solution having an acid reaction. A solution of salvarsan is therefore acid and will remain so until for every molecule of salvarsan there have been added two molecules of sodium hydroxide or a similar monovalent base."

William Allen Pusey, in a discussion of the situation regarding salvarsan, asserts that indications are very strong that we are on the verge of a period of indiscriminate and reckless use of this remedy that will result in disappointment and damage to many patients. He further points out that this drug does not absolutely cure syphilis and that in the hands of careless or incompetent practitioners it is likely to do much harm.—*J. Am. M. Ass.*, 1911, v. 51, pp. 118–120.

A recent number of *N. A. R. D. Notes* (February 2, 1911, p. 998), calls attention to an advertisement from the *Chicago Sunday Examiner* of January 23, 1911, in which salvarsan ("606") is being indirectly exploited to the laity. Needless to say advertisements of this type are destined to do an untold amount of harm.

JOHA is the name applied to an oil solution of salvarsan that is said by its promoters to be quite stable. It is being marketed in Germany, in ampoulles containing the equivalent of 0.4 and 1.2 Gm. of salvarsan.—*Pharm. Zentralh.*, 1911, v. 52, p. 21.

ADALIN is the name given to brom-diethyl-acetyl urea. This substance occurs as a colorless, nearly tasteless powder that is only sparingly soluble in cold water but freely soluble in alcohol. Adalin is being recommended as a bromide and is given in doses of from 0.3 to 1.0 Gm. three times a day.—*Pharm. Post*, 1911, v. 44, p. 84.

ADIPOL is said to be a preparation of mineral fats that is permanent and has the property of absorbing upwards of 30 per cent. of water.—*Pharm. Zentralh.*, 1911, v. 52, p. 52.

ADRENINE.—Macadie, W., discusses the coloration of solutions of adrenine (adrenalin) and records a number of experiments made by him to prevent the development of free ammonia which he believes is the causative factor. He has found chloroform to be the most efficient antiseptic and recommends keeping a layer of chloroform at the bottom of the solution of adrenine, which is to be kept in dark amber-colored bottles.—*Pharm. J.*, Lond., 1910, v. 85, p. 660.

AFRIDOL.—An abstract asserts that afridol, which is recommended as a powerful antiseptic and disinfectant, is an orthotoluate of mercury and sodium of the formula $(C_6H_3)(CH_3)(CO_2Na)(HgOH)$. It is especially recommended as a component of antiseptic soaps for disinfecting the hands and instruments in the course of surgical operations.—*Chem. & Drug., Lond.*, 1910, v. 77, p. 828.

ASPIRIN.—Cyrus Graham reports a case of acute intoxication following the ingestion of two five-grain tablets of aspirin. The poisoning resulted in marked œdema of the mucous membranes of the eyes, nose and mouth; to such an extent that the patient could hardly breathe. There was also considerable swelling of the head and neck, congestion of the conjunctivæ and impairment of vision. The symptoms disappeared in from ten days to two weeks, but Dr. Graham nevertheless believes that aspirin should be listed as one of the dangerous drugs and should not be retailed indiscriminately to the laity.—*J. Am. M. Ass.*, 1911, v. 56, p. 261.

CALMINE is one of the names under which veronal-sodium, a combination of diethyl barbituric acid and sodium, is being exploited as a new and absolutely safe hypnotic. The same substance is also being marketed as medinal and pharmacists need not be surprised to find that thoughtless physicians will combine calmine, medinal and veronal in the same prescription.—*J. Am. M. Ass.*, 1911, v. 56, p. 137.

DIGITALIS.—J. Gordon Sharp and J. Lancaster, in a general discussion on the time of gathering digitalis and the keeping qualities of the tincture, present a number of observations on this important drug. They have found that the leaves from wild growing plants are frequently contaminated by other leaves. They also point out that the leaves themselves, if thoroughly dry are more permanent than is the tincture.—*Pharm. J.*, Lond., 1911, v. 86, pp. 102–104.

Xrayser II, in a reference to the history of digitalis, points out that this drug is receiving a degree of attention which is in strong contrast with the neglect it suffered for a century and a half after

its first introduction into the Pharmacopœia in 1650, and expresses the hope that the time is not far distant when its active constituents will be scientifically determined, and their respective value more accurately ascertained.—*Chem. & Drug.*, Lond., 1910, v. 77, p. 861.

J. Burmann has published (*Bull. Soc. Chim.*) a criticism of Keller's method of estimating digitoxin, and says it can only be regarded as valid if it is admitted that the product weighed always contains true digitoxin in the same proportion relative to the other glucosides present. He gives the following toxic doses per kilogramme of body-weight of rabbits: Merck's crystalline digitoxin, 0.0026 Gm.; digitoxin prepared by Keller's method of estimation 0.008 Gm., or 9.2 c.c. of a 0.3 per cent. solution in alcohol (7 parts), glycerin (25 parts), and water (68 parts); Cloetta's soluble digitoxin, 10.3 c.c. of a 0.3 per cent. solution in the triple menstruum just mentioned.—*Chem. & Drug.*, Lond., 1911, v. 78, p. 48.

Ethyl Chloride.—Horatio C. Wood, Jr., reports a statistical study on the comparative danger of ethyl chloride as an anæsthetic. He finds that the approximate mortality from the use of ethyl chloride is 1–6000 anæsthesias while the mortality for nitrous oxide is about 1–1,000,000, chloroform 1–3500, and ether 1–15,000 anæsthesias. As the use of ethyl chloride corresponds more nearly to that of nitrous oxide, Wood concludes that it must be considered as an unsafe anæsthetic.—*J. Am. M. Ass.*, 1910, v. 55, p. 2229.

Formurol.—The Secretary of the Council on Pharmacy and Chemistry of the American Medical Association reports a chemical examination of formurol which corroborates the findings of Zernik that formurol is not a definite chemical compound but is in reality a mixture of hexamethylenamin and sodium citrate.—*J. Am. M. Ass.*, 1911, v. 56, p. 210.

Globularin is the name given to a glucoside obtained from *Globularia alypum*. It is said to cause an increase, followed by a transitory decrease in the amount of urine excreted.—*Pharm. Zentralh.*, 1911, v. 52, p. 52.

Glycerin.—An editorial in the *Journal of Industrial and Engineering Chemistry* (January, 1911, v. 3, p. 3) points out that the manufacture of nitroglycerin explosives is the determining factor in regulating the price of glycerin. From being a by-product in the manufacture of lead plaster glycerin has become one of the principal products of the saponification of fats and at the present time sells at from two to three times the price of the raw material from which it is made.

HELENIC ACID.—Reeb (*Nauveaux Remèdes,* 1910, 511) has extracted from the leaves and flowers of *Helenium autumnale* a crystalline glucoside of the formula $(C_8H_{10}O_2)x$. It melts at 161° and is of an acid nature, and has therefore been named helenic acid. On hydrolysis it yields glucose and a body not further examined.—*Chem. & Drug.,* Lond., 1911, v. 78, p. 48.

L-SUPRARENIN SYNTHETIC is epinephrine produced synthetically according to the method of Stolz and Flaecher (*Ztschr. f. physiol. Chem.,* v. 58, p. 189). It occurs as a white odorless powder nearly insoluble in water, alcohol and ether. It melts at 211 to 212° C., and, as its name indicates, has the power of rotating polarized light to the left. This substance has the chemical and physical properties and produces the physiologic effect of natural epinephrine obtained from suprarenal glands.—*J. Am. M. Ass.,* 1911, v. 51, p. 120.

L-SUPRARENIN SYNTHETIC BITARTRATE is the acid tartrate of l-suprarenin synthetic. It occurs as a white odorless powder readily soluble in water, yielding an acid solution. It melts at 149° C. and rotates polarized light to the left.—*Ibid.*

NIEMEYER'S PILL.—James Tyson asserts that the name "Niemeyer's Pill" is being erroneously applied to the well-known pill of calomel, squill and digitalis. This pill antedates Niemeyer, and if known by any name it should be that of Addison or Guy.

The true Niemeyer pill is composed of one grain of quinine, one-half grain of digitalis and one-quarter grain of opium, and was used by that physician for the fever of pulmonary tuberculosis.—*J. Am. M. Ass.,* 1911, v. 56, p. 211. See also p. 443.

PHENOLPHTHALEIN, ACTION OF.—Fritz C. Koehler reports an experiment made upon himself, to determine the factors influencing the action of phenolphthalein as an aperient. He found that while 0.10 Gm. of phenolphthalein had a distinctly laxative action under ordinary conditions and when the feces reacted alkaline a much larger dose had no effect when the diet was regulated to produce an acid reaction of the feces.—*Schweiz. Wchnschr. f. Chem. u. Pharm.,* 1910, v. 62, p. 802.

POPPY.—M. G. J. M. Kerbosch reports a comprehensive study to determine where and when the important opium alkaloids are formed in the growing plant. He concludes that seeds of *Papaver somniferum* L. contain a trace of narcotine and anorphus alkaloid. The germinating seeds have an increased narcotine content and the

sequence in which the alkaloids are found in the growing plant is narcotine, codeine, morphine, papaverine and thebaine. The first four of these alkaloids occurring in plants that are from 5 to 7 cm. high.—*Arch. d. Pharm., Berl.,* 1910, v. 248, pp. 536–567.

THE PHOSPHORUS MATCH.—A recent editorial in the *Journal of Industrial and Engineering Chemistry* (January, 1911, p. 1) contains some rather interesting information regarding the origin and development of matches and the dangers attending the exposure to fumes of phosphorus. The earliest known matches, made in 1812, were tipped with potassium chlorate and sugar and ignited by sulphuric acid. The phosphorus match was introduced by Derosne in 1816, and because of the danger attending its manufacture has been prohibited in nearly every European country, preference being given abroad to the so-called safety matches or to matches tipped with a composition containing one or the other of the sulphides of phosphorus.

PHILADELPHIA COLLEGE OF PHARMACY.*

BY HOWARD B. FRENCH, President.

Since the world began the inspiration of association has stirred the hearts of men, enlightened their minds, strengthened their hands and ennobled their lives. The spirit of great acts lives throughout the years, creating and forwarding movements which bless mankind.

When the climax of the long night of colonial injustice and oppression had been reached, and the representatives of a suffering people came together in 1774, to consider ways and means of relief, they wended their way to a spot already historic, where the fires of liberty had been lighted and where the voice of the coming nation of freemen had been heard, demanding just recognition of the inalienable rights of man. As though directed by the finger of fate, building better than they knew, a few years before, in 1771, a little company of men, drawn from the humbler walks of life, in the City of Penn, honest and faithful toilers,

*An address covering some of the interesting facts in the history of the College and delivered at a banquet given by the president at the Union League Club, Philadelphia, in commemoration of the ninetieth anniversary of the College, February 23, 1911.

helping to lay the foundation and build the superstructure of a mighty republic, had reared a meeting place which was now to become the scene of events memorable while time shall last.

Very few of the delegates to the Carpenters' Hall Assembly knew or had ever heard of this unpretentious building, modestly located back from the main street of the city, as though seeking an undiscoverable retreat. From the Colonies far and near, they came, and under the guidance of the God of nations, whose protection they wisely and devoutly sought at the very beginning, they solemnly and courageously deliberated. Their just and patriotic conclusions met with an instant and hearty response in the hearts of the people. They made Carpenters' Hall a Mecca for unborn generations, a place where the men of the future might safely seek counsel and wisdom.

As the present representatives of an honored and beneficent institution, it is our privilege to remember with pride and satisfaction the fact that its founders first met where the patriotic leaders of revolutionary days first assembled. It could not have been otherwise than that they too should have built wisely and well.

During the fifty years of its existence, from 1770 to 1820, before its temporary occupancy by the founders of the Philadelphia College of Pharmacy, Carpenters' Hall had a peculiarly eventful history. It had its singular vicissitudes, and at one time was nearly lost sight of as a place worthy of lasting public honor. Yet within that period, it was the scene of events of surpassing importance. The Provincial Assembly of Pennsylvania met there in July, 1774, and in September and October of the same year, the first American Congress. In 1775 a conference was held in this Hall of far-reaching effect upon the development of trade and commerce in America. This was an assemblage of prominent financiers and manufacturers interested in the establishment of the cotton and woollen industry in this country. The following year, in 1776, the Provincial Committee met and resolved to call a convention to form a government for Pennsylvania, which should receive all its authority from the people only. When, liberty having been achieved, the problem of the hour was the formation of a national government which should stand the storms and trials of the years to come, here again, in 1787, came the chosen counsellors of the people to frame that immortal document—the Con-

stitution of the United States—which the greatest Englishman of the nineteenth century declared the wisest instrument ever conceived by the mind of man. In 1791, the first Bank of the United States commenced business in Carpenters' Hall, continuing therein for six years.

With extraordinary self-forgetfulness, it was at this time, the company owning the Hall, now so historic and sacred, withdrew from it, so far as their meetings were concerned, and for two generations met in an adjoining building. The Bank of the United States was succeeded, in 1797, by the Bank of Pennsylvania, for a short period. From 1802 until 1817, the Federal government there collected its custom duties. After this came the second Bank of the United States. Successive occupants in different parts of the building represented the literary, scientific, benevolent, educational and musical interests of the city.

For a time Friends met in the Hall for worship, consecrating its wall to spiritual things. In 1833 the Supreme Court of Pennsylvania held its sessions in this building. In 1859 City Councils sought to purchase the Hall, on account of its historic interest and association, but the proposition was respectfully declined. Having been carefully restored and maintained in its primitive simplicity, the old Hall has been in sole possession during the past sixty years of the Carpenters' Company. Its history should ever inspire men to unselfish purposes and lofty deeds.

The spirit which actuated the founders and early trustees of the Philadelphia College of Pharmacy is most impressively illustrated on the pages of the minute books of the institution. These earnest minded men never lost sight of the great objects to be attained, the correction of trade abuses and the elevation of their calling, the extension of knowledge and the consequent inestimable service to mankind. One of the first matters considered, following organization, was careful revision of the existing pharmacopœia, in accordance with the latest accepted standards, every formula to be satisfactorily tested before approval. Exceeding care was exercised in the election of members of the association and in the selection of trustees and members of the faculty of the College. Only men of the highest intelligence and recognized probity were entrusted with the direction of its affairs. The name was early changed from the Philadelphia College of Apothecaries to the Philadelphia College

of Pharmacy. Evincing an earnest desire for the newest information on trade and professional subjects, at a meeting in December, 1822, a subscription of $25 to the best periodicals relating to pharmacy was authorized. At the same meeting, the Board of Trustees presented an encouraging report of the work of the College during its first two years. Difficulties had been cleared away, much progress made and the outlook was all that could be desired. It was added: "To guard against future abuses and to rectify those existing in the preparation and sale of medicine, to extend our knowledge of pharmacy and to improve the science, may be considered the prominent objects of the institution." These, indeed, were never lost sight of. The school had been established and now a library was a pressing need. There was a further review of the care exercised governing the question of conferring degrees, it being determined that this privilege should only follow the most faithful and efficient study. The duty of continuing to guard the public against the imposition and peril of impure and fraudulent drugs was emphasized anew.

In the report for 1823 it was stated that there were upwards of one hundred books in the library. In view of our present great library, covering all departments of pharmaceutical study, this statement sounds pathetic. In this report, first mention is made of the imperative need of a cabinet of specimens. The founders looked abroad for knowledge. At a meeting in September, 1823, a translation of the proceedings of the Society of Pharmacy of Paris was read to attentive listeners; also a translation of an article in the "Journal de Pharmacie," on the best method of preparing a certain syrup. A committee was appointed to continue this enlightening work. At a meeting in November of the same year, a loan of $1000 was authorized towards the library and a cabinet of specimens. This was a bold step, confidently taken. This loan was carried for a number of years and there was great rejoicing when it was paid off. There were no multi-millionaires in those days, to hand around vast sums for public entertainment and enlightenment.

At a meeting in October, 1824, an important step was taken in asserting and maintaining the dignity and honor of the profession of pharmacy and of the dealers in medicine. This was the adoption of a resolution referring to a growing demoralizing custom

of secret partnership between physicians and druggists. It was vigorously declared: "The Philadelphia College of Pharmacy views all such combinations as disreputable and unfair and it recommends to its members to abstain from them and to discourage them as far as possible." A copy of this resolution was sent to the Philadelphia College of Physicians and to the Philadelphia Medical Society, both of which organizations heartily endorsed the declarations made. The College of Physicians asked co-operation in a movement to prevent druggists from compounding medicine for customers without a physician's prescription, and the College of Pharmacy promptly acceded to this timely request.

In March, 1825, the "Journal of American Pharmacy" was conceived and the first number issued a year later. At the last meeting in December, 1828, it was decided to present a gold medal to the student presenting the best thesis for graduation, the subject to be "a full and original analysis in vegetable chemistry."

A Committee Report submitted April 27, 1829, said: "The Philadelphia College of Pharmacy has now been in existence for more than eight years. During that period it has, with slender funds and through many discouragements, effected more for the improvement of American Pharmacy than all that has before been done or attempted in this country. It has produced union and concert, a more liberal spirit and more elevated views among the apothecaries of Philadelphia. It has had the honor of establishing the first school of Pharmacy, which this country has seen. It has established the first and only American journal devoted exclusively to the science and art of the profession. It has resolved a company of shopkeepers into a scientific association. It has educated young men with more accurate science and more extensive knowledge than their predecessors." At this time also, it was decided to take another step forward, through the creation of a loan of $1000 for the purpose of purchasing the most approved chemical and philosophical apparatus for the use of lecturers of the College. The publication committee found itself facing serious problems from time to time. Reference is pathetically made to the "awful chasm" consequent upon delinquent subscribers and those withdrawing subscriptions to the "Journal of Pharmacy," yet they courageously go forward, confident in the belief of renewed support. It was slow work, educating the trade and profession to support periodical publications.

At the beginning of 1831, there were only about forty-five students assured for all the lecture courses. But the College authorities felt encouraged in the belief that its work was destined to widely extend, as its character became more favorably known.

In 1838 the graduating class numbered only nine, and this, seventeen years from the beginning. The curriculum could not be compared with that of to-day, yet it was a severe test for those days.

In 1838 Thomas P. James was elected a member of the college. Twenty-seven years later this gentleman's drug house, No. 630 Market Street, was bought out by my father's firm, French, Richards & Co., after the destruction of their establishment at Tenth and Market Streets by fire.

The first Minute Book covers the years 1821 to 1841, inclusive. The second Minute Book, beginning 1842 and running to 1870, contains a most interesting tabulated statement relating to the officers of the College, over which we might absorbingly linger. It is a record of noble, earnest, unselfish service on the part of men worthy of lasting honor. The names of twenty-eight subscribers to the first building fund, the old hall in Zane Street, are given, that of Dr. Geo. B. Wood near the top, for $800.00. Here are the names of five presidents, from 1821 to 1885, who served an average of thirteen years each; Daniel B. Smith served twenty-five years and Dillwyn Parish sixteen years, he having filled the more laborious office of secretary for twelve years previously. Many other officers served long terms; Charles Ellis was secretary fourteen years and president fifteen years. Henry Troth served in the vice-presidency thirteen years, mostly occupying the chair at stated meetings. To the fidelity, energy and wisdom of these officers of the first half century of its existence, the Philadelphia College of Pharmacy owes an immense debt of gratitude.

At a special meeting in November, 1847, a memorial to Congress was adopted, directing attention to the importation of impure and adulterated drugs and asking the enactment of efficient legislation to prevent a continuance of this growing evil. This suggestion was complied with.

March 31, 1848, the first Code of Ethics was adopted, the College asking its endorsement by the College of Physicians and other medical bodies. This was an important advanced step taken and the effects have been far-reaching and lasting.

The graduates of 1851 numbered 19; those of 1854 reached 26; those of 1856 numbered 28, with 112 students enrolled. The College was steadily marching onward and upward. The graduates of 1869 numbered 48; those of 1870, 51; and for many years past the roll has numbered considerably over a hundred.

At a special meeting December 10, 1867, the first steps were taken to purchase the present site of the College buildings, and in the autumn of the following year, the institution was removed to its present location, Tenth Street below Race. At the forty-seventh annual meeting, March 30, 1868, the following quaint "farewell minute" was read and adopted:

"The members of the College are reminded that the present is the last meeting of the College within the walls of the present building, where, for many years they have so pleasantly conferred together. On separating, and bidding adieux to the present locality, they hope that their next regular assembling will be under pleasant auspices in a building much better adapted to the growing necessities of the College, and that each member will feel a renewed interest in the Philadelphia College of Pharmacy."

Renewed interest *was* awakened; and during the forty odd years the College has continued to occupy its present home it has unceasingly grown, and strengthened, and developed in every direction until it stands to-day, as it justly merits, at the head of all institutions of the kind in the world.

In the ninety years of its existence about 20,000 students have been instructed; some of these are widely known as the brightest and most successful professional and business men of the time, measuring up to a very high standard of learning and efficiency. And it is of more than ordinary interest to note, that it is a rare exception to find a large pharmaceutical establishment in the United States that is not directly or indirectly under the management of a graduate or former student of the Philadelphia College of Pharmacy.

With a commanding college home furnished with all scientific paraphernalia of the most modern type; splendidly equipped departments of research and experiment; advanced courses of instruction that would have appalled the early graduate; a corps of

instructors thoroughly competent, enthusiastic and zealous in the performance of their special duties, in every way equal to the most exacting demands of the times—our College occupies a foremost position in the line of scientific discovery and practical utilization of new ideas according to the most approved methods. It is a self-confident leader, not a timid follower.

Having a just pride in the past which has a record rich in usefulness and honor, it behooves us to push on to still higher and greater things that the achievements of the future may meet our highest and worthiest expectations.

PHILADELPHIA COLLEGE OF PHARMACY.

NINETIETH ANNIVERSARY.

Some weeks ago the president of the Philadelphia College of Pharmacy sent the following invitation to the officers, members of the Board of Trustees and faculty, the Mayor of Philadelphia and the heads of our sister institutions:

Mr. Howard B. French
requests the pleasure of
..... 's
Company at Dinner
Thursday evening, February 23, 1911,
at seven o'clock,
Union League Club,
In celebration of the Ninetieth Anniversary
of the founding of the
Philadelphia College of Pharmacy
at
Carpenters' Hall.

While the members of the college recognize the significance that must necessarily be attached to the attainment of the centenary of the founding of the oldest college of pharmacy in this country, as shown by the appointment of a committee even at this early date to devise and consider plans for the celebration of its one hundredth anniversary in 1921, it is probable that the members for the most part had not considered the desirability of observing its ninetieth anniversary, and hence this invitation from President French must have come as more or less of a surprise.

It showed, however, how closely he is in touch with the progress of events and how much he has at heart the work of the college. The dinner was held in the celebrated banquet hall of the Union League, where all of the official dinners in honor of great events or the achievements of distinguished men were formerly held. On the historic oval table around which the diners gathered was a magnificent display of flowers, including freesia, narcissus, antirrhinum, and lilacs with a background and setting of *Smilax laurifolia* and fronds of the Boston fern. The menu, which was well selected, was served in accordance with the service of this famous club.

The printed menu was in the form of a booklet, which contained a list of the names of the officers, faculty and instructors of the college and of the invited guests, and was bound in Morocco leather with an imprint of the seal of the college and two illustrations, the one showing Carpenters' Hall where the college was organized in 1821 and the other, the present college building. On the last page inside the cover were the words, " Organized, 1821, P.C.P. Progressing 1911."

At the conclusion of the dinner the host, President French, read an interesting historical sketch of the college, which is published in another part of this issue of this JOURNAL. He then called upon Hon. John E. Reyburn, Mayor of Philadelphia, who delivered a most earnest address on the relationship of the institutions of learning to the city. He was generously applauded for his remarks, in which he said that he hoped that it would be possible to bring all of the educational institutions of Philadelphia together at a common centre on the new Parkway Boulevard. He further stated that his idea was not that they be absorbed or lose any of their individual character, but that they might derive all of the benefits of close association and neighborly contact. Hon. Henry F. Walton, President of the Medico-Chirurgical College, was the next speaker, and he heartily endorsed all that the Mayor had said in regard to the importance of the close association of independent schools and then remarked that he was pleased to bring the felicitation of the Medico-Chirurgical College to the officers and faculty of the Philadelphia College of Pharmacy gathered on this eventful occasion.

Dr. J. W. Holland, dean of Jefferson Medical College, said that he brought the warmest congratulations of the " twin-sister " of the Philadelphia College of Pharmacy. He stated that while Jefferson was founded four years later than the Philadelphia College of

Pharmacy, her first graduating class was sent forth in 1826, which was the time of the graduation of the first class of the Philadelphia College of Pharmacy. He also referred to the fact that while a number of students of the Philadelphia College of Pharmacy had gone to Jefferson Medical College, this college also gave to the medical faculty of Jefferson, Professor Franklin Bache, who was connected with the faculty of Jefferson Medical College for seventeen years. Brief addresses were also made by Vice-President Jos. L. Lemberger, and Professors Remington, Sadtler, Kraemer and Moerk.

The addresses of the Mayor and some of the other speakers not only hinted at the general scheme for the improvement of Philadelphia, which has been worked out by experts in their respective lines, but showed that the scheme comprehends a more or less definite plan for the improvement and, to some extent, co-ordination, of the educational institutions of the city. In addition, a fresh impetus was given the active workers of the college by the opportunity afforded to commingle at the same board and by reason of the rehearsal of the ideals and deeds of those who had gone before, to press forward to the century mark with renewed zeal and earnestness. The occasion was one which was encouraging to the older men who had been actively engaged in the work for these many years, and likewise an inspiration to the younger men upon whom the responsibilities of the future rest.

H. K.

NOTES AND NEWS.

A PORTRAIT OF PRESIDENT FRENCH will be presented to the College at a testimonial dinner to be given at the Union League, on Tuesday, April 4, 1911, at seven o'clock. This promises to be one of the most interesting occasions in connection with recent affairs of the college.

A HANDY REFERENCE BOOK. The *Druggists' Circular* has recently published the second revised and enlarged edition of their book on "The Modern Materia Medica." This work contains much valuable information regarding the description, tests, therapeutic action and doses of all of the newer substances that are likely to be prescribed, and will be found of very great assistance to the practical druggist who is expected to know something of these things at a moment's notice.